



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/049,602	02/14/2002	Kazuo Chikaraishi	XA-9620	9715

181 7590 10/23/2003  
MILES & STOCKBRIDGE PC  
1751 PINNACLE DRIVE  
SUITE 500  
MCLEAN, VA 22102-3833

EXAMINER

VAN PELT, BRADLEY J

ART UNIT	PAPER NUMBER
----------	--------------

3682

DATE MAILED: 10/23/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/049,602

Applicant(s)

CHIKARAISHI ET AL.

Examiner

Bradley J Van Pelt

Art Unit

3682

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 22 August 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claim 2 is rejected under 35 U.S.C. 102(b) as being anticipated by Chikuma (EP 0 666 210 A2).

Chikuma discloses an electrically power steering apparatus provided with a worm wheel for transmitting driving force of a motor as auxiliary steering force together with a worm gear, being characterized in that said worm wheel is formed by joining a thin synthetic resin to an entire outer peripheral surface of a teeth portion of a gear-shaped core metal by way of chemical bond according to composite molding technique or adhesive (see column 4, lines 10-23).

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1, and 3-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chikuma et al. (EP 0 666 210) in view of Takaoka (USPN 5,819,871) and in view of Downs et al. (USPN 6,286,474).

Chikuma et al. disclose an electrically powered assisting apparatus (102), being characterized in that a gear portion (111b) of said worm wheel is made of synthetic resin material, and a core metal portion (111a) of said worm wheel is made of metallic material;

Chikuma et al. do not disclose a torque limiter having a ring member for applying elastic force mounted between a worm wheel and an output shaft;

a change in spacing between said worm wheel and said output shaft as a result of differential thermal expansion operates to change a limit torque of said torque limiter from a lower value under high temperature to a higher value under low temperature.

said output shaft is made of iron material; or

core metal is made of aluminum alloy or copper alloy.

Takaoka discloses an electrically powered assisting steering apparatus provided with a torque limiter having a ring member (51) for applying elastic force mounted between a worm wheel and an output shaft.

Downs et al. shows a change in spacing between a worm wheel (34) and said output shaft as a result of differential thermal expansion operates to change a limit torque of said torque limiter from a lower value under high temperature to a higher value under low temperature (column 3, lines 19-32) an output shaft (24) is made of iron material; and a core metal (36) is made of aluminum alloy or copper alloy.

To modify the apparatus of Chikuma et al. so as to utilize a torque limiter, as claimed, would have been obvious to one of ordinary skill in the art in view of the teachings of Takaoka as it would increase the wear life of the worm gear arrangement, further reducing the maintenance costs.

To modify the apparatus of Chikuma so as to provide a gear made of aluminum and a shaft made iron would have been obvious to one of ordinary skill in the art at the time the invention was made in view of the teachings of Downs et al. that such an arrangement reduces gear rattling, and allows for a smother operation.

***Response to Arguments***

5. Applicant's arguments filed August 22, 2003 have been fully considered but they are not persuasive.

In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, it is well known in the art to use torque limiter rings, and it is clear that they will mitigate excessive stress on the teeth of gears, therefore, increasing the wear life and decreasing maintenance costs.

In response the argument that the Chikuma reference does not anticipate claim 2, it is clear that this is not the case. Each and every element is clearly shown in the Chikuma reference, specifically Chikuma in column 4 lines 16 and 17, "outer ring portion 111b which is made of nylon ...surrounds the core portion 111a and is adhered to the outer surface of the core portion 111a." Therefore, it is clear that the Chikuma reference anticipates all of claim 2.

Art Unit: 3682

Applicant's arguments with respect to claims 1 and 3 have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

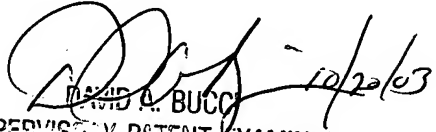
6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Bradley J Van Pelt whose telephone number is 703.305.8176.

The examiner can normally be reached on M-Th 7:00-4:30, 2nd F 7:00-3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David A Bucci can be reached on 703.308.3668. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703.308.2168.

BJVP

  
DAVID A. BUCCI  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 3600